Proficy

Troubleshooter

Proficy Troubleshooter

Benefits

- Obtain the likely causes of process problems and variation
- Perform "what if" scenario analysis
- Extract process rules automatically from data
- Estimate the benefits of implementing recommendations

Features

Proficy* Troubleshooter helps you continuously monitor your operational and business effectiveness for enhanced performance with the following features:

- Seamless integration with Proficy Historian
- Brushing in data visualization
- Process rules extraction
- Batch fingerprinting
- Batch visualization
- Benefit estimation
- Rich data preparation tools

Proficy* Troubleshooter from GE Intelligent Platforms provides powerful analytical tools that utilize leading-edge techniques to extract knowledge from existing historical process and manufacturing plant data. These tools help identify causes for production problems as well as opportunities for preventing these problems in the future.
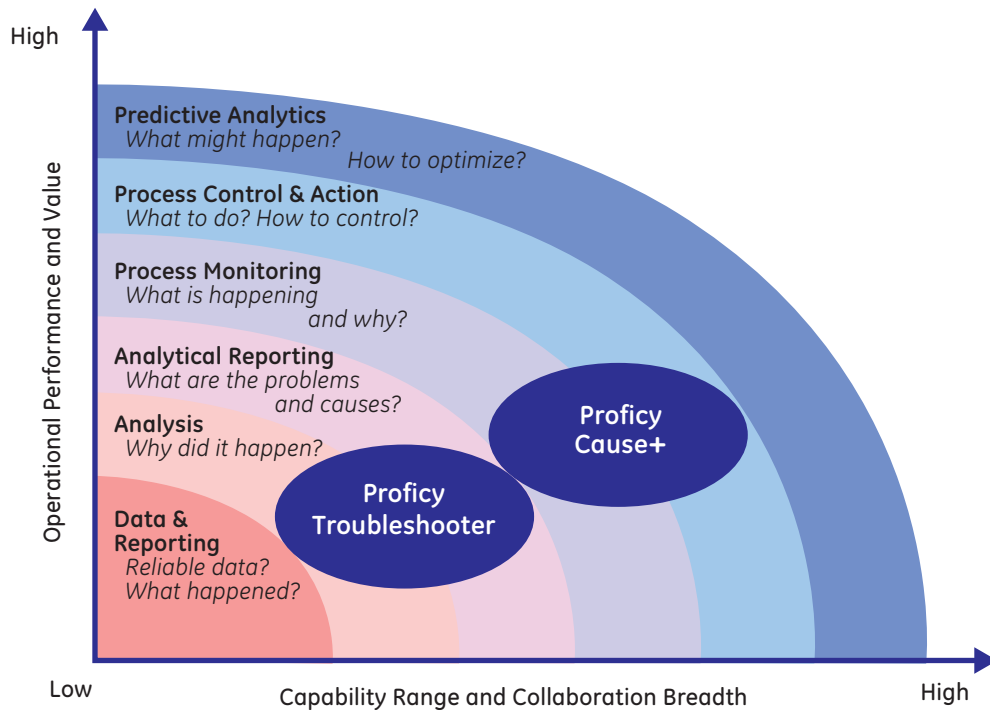
Proficy Troubleshooter can be used for batch and discrete processes as well as continuous processes. It provides you with the capability to visualize process problems and their causes through modeling and simulating the process, using available historical plant data. Proficy Troubleshooter enables an "Intelligent Historian" that is clearly differentiated from, and more valuable than competing historians.

Once you identify the causes for variation and problems in the process and the impact of the process on your assets, you can better understand the relationships between the data. You can build business cases before attempting real-time solutions and prevent problems in the future. What's more, these powerful technologies provide a clear path to Proficy Cause+, another powerful, tightly integrated GE solution that analyzes your real-time data.

Proficy Troubleshooter

Proficy Troubleshooter Role illustrates the Proficy Troubleshooter positioning with regards to data analysis in the context of increasing business value. The Troubleshooting products provide the basis for analysis and solutions development and address questions such as "Why did it happen?"

Wizards for easy troubleshooting

Proficy Troubleshooter provides wizard environments that facilitate troubleshooting of processes and simulates a solution's development environment. As a result, you can then visualize process problems and their causes in a simple, intuitive way.

Proficy Troubleshooting Wizards enable:

- Guided troubleshooting steps
- Visual and automated data preparation
- Visual analysis of historical data
- Use of powerful but intuitive models and statistical charts to identify the causes of process problems using continuous/batch/discrete data
- Configuration of smart process monitoring solutions from a single, unified environment
- Identification of the opportunity and benefit for developing and implementing an online solution

Proficy Continuous Troubleshooter

Proficy Continuous Troubleshooter facilitates continuous process troubleshooting by identifying root causes using historical data and supporting real-time process improvement solution implementation in an all-in-one software environment. Automated and real-time solutions range from data integrity, advanced process control, and operator decision support to providing management with transparent, accurate, and up-to-date production accounting and KPI information for improved plant and enterprise management.

Proficy Continuous Troubleshooter examines production data and determines the probable causes of problems such as product defects and diminished output by taking account of all the factors, including how they interact with each other. After determining what the root causes are, it provides implementable solutions that can be deployed via the Action Object Server. You can leverage rich data preparation functionality such as combining and preparing continuous process data for troubleshooting from multiple data sources with the same, different, or variable sampling rates.

The Proficy Continuous Wizard is the troubleshooting front-end application of Proficy Continuous Troubleshooter that allows you to access data from a variety of historical data sources, prepare and visualize data, quickly construct rules-based and non-linear process models, and perform knowledge extraction via the models, a benefit estimation, knowledge fusion and action object simulation and deployment - all with a few clicks.

Benefits

- Troubleshoot continuous process problems rapidly and easily
- Execute custom data preparation for accessing, combining and filtering continuous data
- Rapidly identify special and common causes of Key Performance Indicator (KPI) variation using fully integrated data visualization, statistical analysis and modeling and model analysis
- Identify money-saving continuous process opportunities and solution feasibility
- Leverage the ability to deploy solutions for continuous process applications automatically in real time
- Integrate complementing process improvement software to existing HMI, MES and ERP systems

Proficy Troubleshooter

Proficy Discrete & Batch Troubleshooter

Proficy Discrete & Batch Troubleshooter offers a powerful combination of easy-to-use and fully integrated batch and discrete data visualization and statistical analysis, as well as modeling and model analysis techniques of imported discrete or batch data. It enables you to interface directly to plant systems, automates all the data preparation, and supports correlation analysis and statistical calculations. You can quickly and easily construct models to explain the causes of process exceptions and desired or undesired process behavior.

The Proficy Discrete & Batch Wizard, one of the components, helps you rapidly understand the root causes of process variation. You can visualize batch data in a simple and intuitive way, which allows you to focus on comparing various parts of a product, batch, stage or similar. By allowing you to configure any specific batch hierarchy as represented in a data set, you can visually compare any part of a batch process with any other part - providing deep insight.

Batch overlays and powerful brushing capabilities allow you to identify problematic areas in a process. Batch statistics

on brushed, non-brushed or all data are calculated and displayed according to the configured batch hierarchy. Proficy Discrete & Batch Wizard also provides you with Principle Component Analysis (PCA), Partial Least Squares (PLS), and Decision Tree modeling capability.
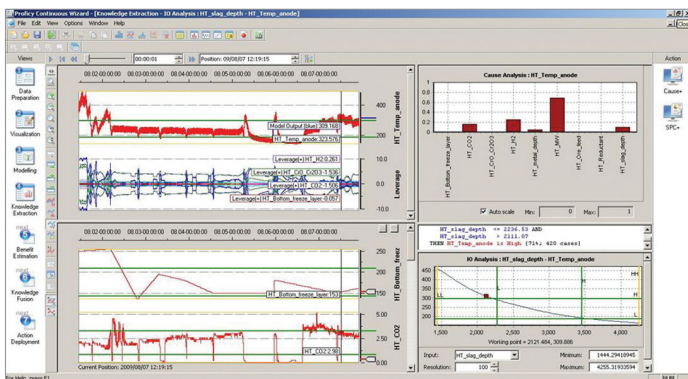
Benefits

- Perform easy troubleshooting of discrete and batch process problems

- Create "golden" batch models and associated analysis easily

- Execute custom data preparation for accessing, combining and filtering data

- Rapidly identify special and common causes of KPI variation using fully integrated data visualization, statistical analysis and modeling and model analysis

- Analyze problematic batches or steps within a batch using batch visualization and batch comparison functionality

- Identify money-saving batch and discrete opportunities and solution feasibility

- Leverage the ability to deploy solutions for batch and discrete applications automatically in real time
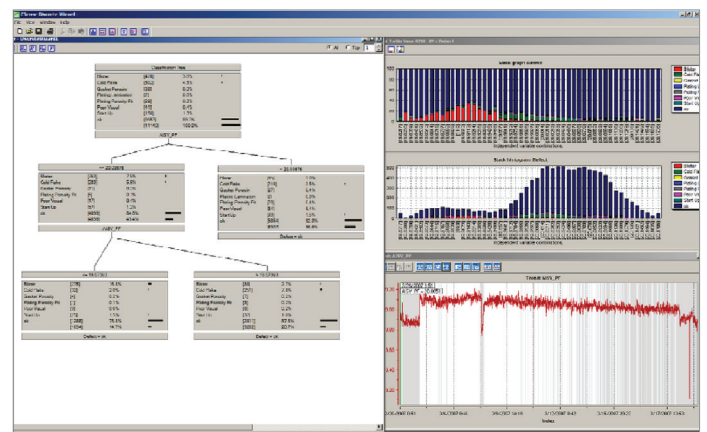
- Integrate complementary process improvement software to existing HMI, MES and ERP systems

Driving intelligence to improve your operations

Data has been logged in manufacturing for years. Analysis of that data has evolved from simple trend analysis with a time context to a full operations understanding of efficiency, quality, production management and traceability. Proficy Troubleshooter brings us to the next step, using advanced mathematic algorithms to gain insight into your process like never before. As a result, you have the knowledge to improve quality and yield from your production and process operations for a sustainable competitive advantage.

Knowledge extraction

Decision tree, node brushing and pivot table analysis

Proficy Troubleshooter

Software requirements

The following operating systems are supported (32-bit and 64-bit versions are supported)[†]:

Any of the following versions of Microsoft® Windows®:

- Windows XP Service Pack 2 (32-bit only)
- Windows Server 2003 Service Pack 2 (32-bit only)
- Windows Vista (32- and 64- bit)
- Windows 7 (32- and 64- bit)
- Windows Server 2008 R2 (64-bit)
- .NET 3.5 Service Pack 1

Any of the following versions of SQL Server:

- SQL Server 2008 (32- and 64- bit)
- SQL Server 2008 R2 (32- and 64- bit)
- SQL Server 2008 Express (32- and 64- bit)
- SQL Server 2008 R2 Express (32- and 64- bit)

[†] **NOTE:** Ensure that you have installed the latest service packs for your relevant operating system. Proficy Troubleshooter has been tested and verified to operate with the latest versions of operating system service packs available at the time of publication.

Hardware requirements

A minimum hardware specification for the effective use of Proficy Troubleshooter is provided. However, a typical or recommended hardware platform specification is highly recommended in order to handle large volumes of data and to allow for a broader scope and extendable troubleshooting projects.

Minimum hardware requirements:

- 128 MB RAM
- 32-bit Intel® Pentium® or AMD Equivalent Processor
- 20 GB available hard drive space prior to installation
- 800x600 display resolution
- Properly installed and enabled network adapter

Typical hardware requirements:

- 2 GB RAM
- 64-bit Intel Pentium Dual Core Processor or AMD equivalent
- 80 GB available hard drive space prior to installation
- 1024x768 display resolution
- Properly installed and enabled network adapter

Recommended hardware requirements:

- 4 GB RAM
- 64-bit Intel Pentium Dual Core Processor
- 80 GB available hard drive space prior to installation
- 1680x1050 wide-screen display resolution
- Properly installed and enabled network adapter

About GE Intelligent Platforms

GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Home and Business Solutions. For more information, visit www.ge-ip.com.

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